UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/662,396	09/14/2000	Nagender P. Vedula	MS150967.1	1302

27195 7590 12/18/2003

AMIN & TUROCY, LLP
24TH FLOOR, NATIONAL CITY CENTER
1900 EAST NINTH STREET
CLEVELAND, OH 44114

EXAMINER	
BASOM, BLAINE T	

ART UNIT	PAPER NUMBER
2173	

DATE MAILED: 12/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/662,396	VEDULA ET AL.	
	Examiner	Art Unit	
	Blaine Basom	2173	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 September 2003*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-91* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *51 and 52* is/are allowed.

6)☒ Claim(s) *1-16,18-23,29,30,32,35,37,39-50,53-57,59-64,67,68,70,73,75,77-86 and 88-91* is/are rejected.

7)☒ Claim(s) *17,24-28,31,33,34,36,38,58,65,66,69,71,72,74,76 and 87* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Response to Arguments

The Examiner acknowledges the Applicants' amendments to independent claims 1, 3, 18, 29, 44, 48, 49, 59, 67, 82, 85, and 86, whereby each of these amendments express "...a mapping screen region, separate from and adjacent to each of the source screen region and the target screen region." Consequently, regarding claims 1-5, 7-9, 18-21, 28-29, 37, 44-46, 48-50, 59-62, 67, 75, 82-84, 86, and 90, the Applicants maintain that Becket et al. (U.S. Patent No. 6,564,368) fails to teach such a mapping screen region. This argument, however, is moot in view of the additional teachings of Liu et al. (U.S. Patent No. 6,216,131), as is shown below. The Applicants make similar arguments for claims 6, 10-13, 15-16, 22-23, 30, 32, 35, 39-43, 47, 53-54, 56-57, 63-64, 68, 70, 73, 77-81, 85, 88-89, and 91, and therefore such arguments are similarly moot in view of the additional teachings of Liu et al.

Further regarding the claims of the present application, the Applicants argue that the lines described by Beckett may be connection indicia, as defined in the specification of the present application, such lines do not constitute mapping indicia. The Examiner respectfully disagrees with this argument. The claims in question do not differentiate between such connection indicia and such mapping indicia. Thus in response to the Applicants' argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., the distinction between a line and mapping indicia) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-5, 7-10, 18-23, 28-29, 32, 35, 37, 44-50, 59-64, 67, 70, 73, 75, 82-86, and 90-91 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,564,368, which is attributed to Becket et al. (and hereafter referred to as "Beckett), and also over U.S. Patent No. 6,216,131, which is attributed to Liu et al. (and hereafter referred to as "Liu"). In general, Beckett presents an application development environment, which allows a user to more efficiently create applications. Regarding the present application, this development environment includes a "Connection Editor." The Connection Editor is used to connect properties of separate programs, such that during runtime, data flow occurs between these connected properties (see column 3, lines 26-50). Consequently, the application development environment presented by Beckett is considered a "mapping tool" like that recited in the claimed invention.

In reference to claims 1, 3, 18, 47-49, 85, and 91, figure 5B shows the graphical user interface of the application development environment, i.e. mapping tool, presented by Beckett. Concerning the present application is the Connection Editor disclosed by Beckett, which is more explicitly shown in figure 4A. As shown in figure 4A, the Connection Editor displays a "source program tree" and a "target program tree", which are graphical representations of a source program and a target program, respectively (see column 5, line 62 - column 6, line 1). Specifically regarding claim 3, the source program tree and target program tree are each tree

structures having a hierarchical representation of nodes, and wherein each node lower in the hierarchy is indented with respect to nodes higher in the hierarchy, as is shown in figure 4A. It is therefore understood that mapping tool graphical user interface disclosed by Beckett includes a source screen region, which is adapted to display a graphical representation of a source object having one or more source nodes, and also a target screen region, which is adapted to display a graphical representation of a target object having one or more target nodes. Moreover, Beckett discloses that a user may make a connection between a node in the source program tree and a node in the target program tree, wherein this connection results in data flow between the properties represented by the nodes (see column 9, line 66 – column 10, line 7). As shown by figure 5D, such a connection is represented by a line between the nodes. Consequently, the application development environment user interface described by Beckett is also understood to comprise a mapping screen region, wherein this mapping screen region is the Connection Editor in general, and wherein this mapping screen region is adapted to allow a user to create a mapping between the source program tree and the target program tree using graphical mapping indicia with a graphical link indicia adapted to associate the target node with the source node. Moreover, and specifically concerning claim 49, it is understood that this mapping is displayed in the mapping screen region as lines between the connected nodes in the source and target objects. Lastly, and with respect to claim 48, it is interpreted that the source or target object may be either a database, or a database schema (see column 10, line 61 – column 11, line 21). Becket, however, does not explicitly disclose that the mapping screen region is separate from and adjacent to each of the source screen region and the target screen region, as is expressed in claims 1, 3, 18, 47-49, and 85. Furthermore, Beckett does not explicitly disclose that the user

interface is adapted to allow a user to replace one of the source and target objects, and to preserve at least a portion of the mapping, as is expressed in each of claims 47, 85, and 91.

Like Beckett, Liu presents a graphical user interface for mapping data fields between separate programs (see column 5, lines 26-33). Figure 3D of Liu presents an example of such a graphical user interface. As shown in figure 3D, there exists a source region, represented by the "Address Cardfile Fields" list, a target screen region, represented by the "REX Fields" list, and a mapping screen region, which is separate from and adjacent to each of the source screen region and target screen region. Particularly, as shown in figure 3D, this mapping screen region surrounds the source and target screen regions and has a common edge with each of the source screen region and target screen region. Furthermore, Liu discloses that a user may remove a particular mapping between a source and target field by selecting the source and target field and then by selecting an "Unmap" button (see column 6, lines 63-65). Since all mappings are not removed (see column 6, lines 62-63), it is understood that at least a portion of the mapping is preserved. Moreover, it is interpreted that the user may create an alternative mapping using the source or target field that was is in the original mapping (see column 6, lines 58-62). The user interface disclosed by Liu thus allows a user to replace one of the source or target fields, and preserve at least a portion of the mapping.

It would have therefore been obvious to one of ordinary skill in the art, having the teachings of Beckett and Liu before him at the time the invention was made, to modify the graphical user interface taught by Beckett such that mapping screen region is separate from and adjacent to the source screen region and the target screen region, as is done by Liu. It would have been advantageous to one of ordinary skill to utilize such a combination because the

separate mapping screen region allows the user to more efficiently and easily identify particular mappings and the nodes for which the mappings are associated, as is demonstrated by Liu. Additionally, it would have been obvious to one of ordinary skill in the art, having the teachings of Beckett and Liu before him at the time the invention was made, to modify the graphical user interface taught by Beckett such that it is adapted to allow a user to replace one of the source and target objects, and to preserve at least a portion of the mapping, as is taught by Liu. It would have been advantageous to one of ordinary skill to utilize such a combination because such an interface allows a user to adjust a mapping if it is not to the user's taste, as is demonstrated by Liu.

Concerning claims 2, 5, 29, 37, and 50, the mapping tool graphical user interface disclosed by Beckett and Liu comprises a source screen region adapted to display a source program tree that graphically represents a source object, and a target screen region adapted to display a target program tree that graphically represents a target object, and wherein the source program tree and target program tree each comprise at least one node. As additionally described above, this mapping tool graphical user interface also comprises a mapping screen region which allows a user to connect a node on the source program tree to a node on the target program tree via a graphical mapping indicia, whereby this graphical mapping indicia comprising a link indicia, namely a line, which is adapted to associate the target node with the source node. This link indicia is also considered a function object, as it is an object, specifically a line, which performs a function, namely that of associating the property represented by the source node with the property represented by the target node such that data flow occurs between these connected properties. Thus with the graphical user interface disclosed by Beckett and Liu, the source

program tree and target program tree contain at least one source node and at least one target node, respectively, wherein the graphical mapping indicia comprises at least one of a link indicia and a function object adapted to associate that at least one target node with the at least one source node.

With respect to claim 4, the graphical user interface disclosed by Beckett and Liu comprises a mapping screen region adapted to allow a user to create a mapping between a graphical representation of a source object and a graphical representation of a target object using graphical mapping indicia. As shown above in the rejection for claim 1, the graphical representations of the source and target objects are each hierarchically-organized trees comprising one or more nodes, wherein the nodes lower in the hierarchy are indented with respect to nodes higher in the hierarchy. As shown in figure 3D of Liu for example, this mapping screen region includes the area between the source and target screen regions in addition to the region surrounding the source and target screen regions. Consequently, it is interpreted that that the hierarchical indentation of nodes in the source screen region is indented toward the mapping screen region, and since the mapping screen region surrounds the surrounds the target screen region, the hierarchical indentation of nodes in the target screen region is considered to also be indented toward the mapping screen region.

Regarding claims 7 and 8, Beckett discloses that a user maps a source node to a target node by selecting the source node in the source program tree and then the target node in the target program tree (see column 9, lines 61-65). It is understood that when a source node is selected, the node is highlighted (for example, see column 8, lines 1-16). Therefore, it is also understood that the graphical user interface disclosed by Beckett is adapted to allow a user to

select a node in the source program tree, wherein the source program tree comprises a node selection indicia adapted to indicate the selected node. Specifically, this node selection indicia is the node highlighted. Beckett further discloses that when a specific "DsgnFrm" node in the source program tree is selected and consequently highlighted, the node's properties are displayed and editable via a "Application Designer Tool-Bar's Property Editor" (see column 9, lines 30-41). This Application Designer Tool-Bar's Property Editor is considered a "node properties page screen" like that recited in claim 8. Beckett thus also teaches that a node properties page in a node properties pages screen is adapted to display a property associated with the selected node, and further adapted to allow a user to modify the property associated with the selected node.

Referring to claim 9, it is understood that each of the source program tree and the target program tree disclosed by Beckett and Liu may include a "collapse indicia" like that recited in claim 9 (see column9, lines 56-58 of Beckett). Specifically, it is understood that such collapse indicia comprise the '⊞' and '⊟' icons displayed in the trees (for example, see figure 5B of Beckett). As known in the art, these icons allow a user to collapse and expand the nodes associated with the indicia in a hierarchical fashion, wherein the trees are displayed in collapsed form and expanded form according to the collapse indicia. Additionally, it is understood that, since they are hierarchical tree structures, the source program tree and target program tree each comprise a root node, which is the first node in the tree. As shown in figure 5B, such root nodes are associated with collapse indicia.

Regarding claim 10, the source program tree and the target program tree may comprise a collapse indicia associated with one of a root node and a record node in the source program tree and target program tree, and wherein the collapse indicia is adapted to allow a user to collapse

and expand a root node and record node in a hierarchical fashion, as is described in the previous paragraph. Although Beckett discloses that the graphical mapping indicia between the source program tree and target program tree comprises at least one of a link indicia and a function object, as is shown above in the rejection for claim 2, Beckett does not explicitly disclose that the link indicia comprises a collapsed link indicia adapted to indicate the association between a target node and a source node when one of the target program tree and source program tree is displayed in collapsed form, as is recited in claim 10. As described above, Liu presents a graphical user interface for mapping data fields between separate programs. Figure 3D displays this graphical user interface. Shown in figure 3D is a mapping between a source object, specifically "Address Cardfile Fields," and a target object, specifically "REX Fields." Like the teachings of Beckett, the mappings between nodes in the target object and source object are represented as link indicia, namely lines, between the nodes. Regarding the claimed invention, in figure 3D the target object is scrolled such that nodes that are mapped to the "Phone," "Extension," and "Fax" nodes in the source object are not displayed. However, the link indicia remains displayed, as is shown in figure 3D. Similar to removing nodes from the display via scrolling, as Liu does, Beckett removes nodes from the display via collapse indicia, as is described above. Therefore, it would have been obvious to one of ordinary skill in the art, having the teachings of Beckett and Liu before him at the time the invention was made, to further apply the teachings of Liu to the graphical user interface taught by Beckett such that the link indicia comprises collapse link indicia adapted to indicate the associated between at least one target node and at least one source node when one of the target node and source node is not displayed, i.e. when one of the source object tree structure and target object tree structure is

displayed in collapsed form. It would have been advantageous to one of ordinary skill to utilize such a combination because the resulting interface provides an indication to the user that a displayed node remains connected to a non-displayed node, and thus gain insight into the created mappings. As shown by Liu, this is a desirable feature in a mapping tool graphical user interface.

Regarding claims 22 and 63, the mapping screen region of Beckett, as modified by the teachings of Liu as described above in the rejection for claim 47, is understood to be adapted to allow a user to move a link by selecting the line near one of the target node, the source node, and a function object, and moving the line to the other of the target node, the source node, and the function object. More specifically, the user selects a line near one of the target node, source node, and function object by selecting the source and target node and then selecting an "Unmap" button (see column 6, lines 63-65 of Liu). The user may then create a new line, i.e. move the line, by selecting a target node and source node and then a "Map" button (see column 6, lines 58-62 of Liu).

Regarding claims 23, 32, 35, 64, 70, and 73, the mapping screen region of Beckett, as modified by the teachings of Liu as described above in the rejection for claim 47, is understood to be adapted to allow a user to select the graphical link indicia between a source node and a target node. As described above in the rejection for claim 2, this graphical link indicia is considered a function object. Liu discloses that a user selects a link between a target node and source node by selecting the source and target node and then selecting an "Unmap" button (see column 6, lines 63-65 of Liu). It is understood that the link is removed in response to such input. Thus the mapping screen further comprises link selection indicia to indicate that the graphical

link indicia has been selected. Specifically regarding claims 35 and 73, it is interpreted that a plurality of link indicia, i.e. function objects, may be indicated by such means.

As per claims 59, 67, and 86, the above-described application development environment graphical user interface presented by Beckett and Liu is understood to teach a method of creating a mapping in a mapping tool graphical user interface. As shown above in the rejection for claim 1, the graphical user interface of Beckett and Liu displays a source program tree, which is a graphical representation of a source object and which includes a source tree structure having one or more nodes. Similarly, the graphical user interface of Beckett and Liu displays a target program tree, which is a graphical representation of a target object and which includes a target tree structure having one or more nodes. Specifically regarding claim 86, it is therefore understood that the graphical user interface disclosed by Beckett and Liu comprises means for displaying a graphical representation of a source object in a source screen region, and means for displaying a graphical representation of a target object in a target screen region. A user may create a mapping between this source object tree and target object tree in a mapping screen region positioned between the source and target screen regions, wherein as described above, this mapping is created using a graphical link indicia in the mapping screen region adapted to associate a target node with a source node. This link indicia is specifically a line, which as described above in the rejection for claim 2, is also considered a function object. Therefore, it is understood that this mapping is displayed in the mapping screen region as a line connecting the two nodes (for example, see column 9, line 66 – column 10, line 3 of Beckett). Lastly, and with specific regard to claim 86, it is therefore interpreted that the graphical user interface disclosed by Beckett and Liu includes means for creating and displaying a mapping between a graphical

representation of a source object and a graphical representation of a target object in a mapping screen region using graphical mapping indicia.

As per claims 19 and 60, Beckett discloses that the graphical link indicia between a target program tree and a source program tree comprises a line in the mapping screen region between the target node and the source node (for example, see column 9, line 66 – column 10, line 3).

Concerning claims 20, 21, 61, 62, and 75, the mapping tool graphical user interface comprises a mapping screen region which allows a user to connect a node on the source program tree to a node on the target program tree via a graphical mapping indicia, whereby as shown above, this graphical mapping indicia comprising a link indicia, namely a line, which is adapted to associate the target node with the source node. This link indicia is also considered a function object, as it is an object, specifically a line, which performs a function, namely that of associating the property represented by the source node with the property represented by the target node such that data flow occurs between these connected properties. Thus with the graphical user interface disclosed by Beckett and Liu, the graphical link indicia comprises a line in the mapping screen region between two of a target node, a source node and a function object. More specifically, the graphical link indicia comprises a line between a source node and a target node. Particularly regarding claims 21 and 62, Beckett discloses that a user maps a source node to a target node by selecting the source node in the source program tree and then the target node in the target program tree (see column 9, lines 61-65). Consequently, it is interpreted that the mapping screen region disclosed by Beckett and Liu is adapted to allow a user to create a link by selecting one of the target node and the source node, and selecting another of the target node and the source node, and wherein the mapping screen region is further adapted to display a graphical

link indicia between one of the target node and the source node, and another of the target node and source node.

Concerning claims 44 and 82 the mapping tool graphical user interface disclosed by Beckett and Liu comprises a source screen region adapted to display a source program tree that graphically represents a source object, and a target screen region adapted to display a target program tree that graphically represents a target object. As additionally described above, this mapping tool graphical user interface also comprises a mapping screen region that has at least one common edge with each of the source screen region and the target screen region, and which allows a user to create a mapping between the source program tree and the target program tree using graphical mapping indicia, specifically a line. Of particular relevance to claims 44 and 82, Beckett discloses that the graphical user interface in which the source, target, and mapping screen regions are displayed may include a "Design Form" frame (see column 9, lines 30-54). It is understood that this Design Form frame is used to create a graphical user interface for an application. Moreover, it is understood that any elements added to the Design Form frame are represented as nodes in both the source program tree and target program tree displayed by the Connection Editor frame (again, see column 9, lines 30-54). The graphical user interface created in the Design Form frame is thus represented by the target program tree. It is further understood that such a graphical user interface created in the Design Form frame is affected by the mappings created via the mapping screen region. Thus the Design Form frame displays a target program instance according to the mappings. Consequently, the Design Form frame disclosed by Beckett is considered a "test screen region," like that expressed in claims 44 and 82. In other words, it is

understood that the Design Form frame is adapted to display a test target object instance, i.e. target program, according to the mappings.

Concerning claims 45 and 83, the Design Form frame, reference number 202, in figure 5B of Beckett presents an instance of a graphical user interface under development. This Design Form frame includes an "Edit Box Component," reference number 513, which is represented by a "Signal" node and a "Value" node in the source program tree and target program tree displayed in the Connection Editor (see column 9, lines 42-54). This Edit Box Component is considered to be an entry field, as it is used as a source for data (see column 9, lines 55-64). Beckett discloses that the "Value" associated with this Edit Box Component is mapped to a "ComputerName" node in the target program tree (again, see column 9, lines 42-54). It is interpreted that a user may enter a constant value into the Edit Box Component, and that this constant value is thus associated with the "Value" node in the source program tree and the "ComputerName" node in the target program tree. Thus the Design Form frame is also considered a "test value page," whereas recited in claims 45 and 83, this test value page is adapted to allow a user to associate a constant value with a node in one of the source object and the target object.

With respect to claims 46 and 84, the Design Form frame, i.e. test screen region, disclosed by Beckett displays a test target object instance according to the mapping presented by the Connection Editor, as is shown above in the rejection for claim 44. Thus this test screen region is considered a "test output page" adapted to display the test target object instance.

Concerning claim 90, it is understood that the graphical user interface disclosed by Beckett and Liu includes means for displaying a test target object instance according to a

mapping in a test screen region. Specifically, this test screen region is the Design Form frame of the interface of Beckett, as is described above in the rejection for claim 44.

Claims 6, 39-43, 77-81, and 89 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Beckett and Liu, which is described above, and also over the teachings of Adobe Acrobat Reader (see figure A). As described above, the combination of Beckett and Liu presents a mapping tool graphical user interface, which comprises: a source screen region adapted to display a graphical representation, i.e. a source program tree, of a source object; a target screen region adapted to display a graphical representation, i.e. a target program tree, of a target object; and a mapping screen region which is separate from each of the source and target screen regions and which is adapted to allow a user to create a mapping between the graphical representation of the source object and the graphical representation of the target object using graphical mapping indicia, and to display at least a portion of the mapping. Beckett however does not explicitly disclose that this graphical user interface comprises a "scrolling indicia" in the mapping screen region, wherein as recited in claims 39 and 77, this scrolling indicia is adapted to allow the user to selectively display portions of the mapping in the mapping screen region. Similarly, Becket not disclose that one of the source screen regions and target screen regions further comprises a scroll bar adapted to allow a user to selectively display portions of the source program tree and target program tree, as is expressed in claim 6. Consequently, Becket does not disclose that the scrolling indicia is displayed when the cursor is near the outer perimeter of the mapping screen region, as is expressed in claims 40 and 78. Beckett also does not explicitly disclose that the user interface comprises a "mapping preview page" in a "mapping

preview page region" adapted to display the entire mapping, as is expressed in claims 41 and 79, and wherein this mapping preview page further comprises a current region indicia adapted to indicate the portion of the mapping currently displayed in the mapping screen region, as is expressed in claims 42 and 80. Lastly, Beckett does not disclose that this mapping preview page is adapted to allow the user to move the current region indicia within the mapping preview page region, to thereby change the portion of the mapping currently displayed in the mapping screen region, as is recited in claims 43 and 81.

Like Beckett and Liu, Adobe Acrobat Reader presents an interface which is used to display information to a user via a window frame. Regarding the claimed invention, this interface of Acrobat Reader includes scrolling indicia, namely a scroll bar, which is adapted to allow the user to selectively display only a portion of the information in the window frame (see reference number 2 in figure B). Like the mapping screen region disclosed by Beckett and described above, this user interface of Acrobat Reader comprises an outer perimeter. In Acrobat Reader, the scroll bar is displayed at all times, even when a user moves a user interface selection device, i.e. a cursor, near the outer perimeter. Also, the scroll bar indicates a direction in which scrolling is possible, via up and down arrows (see reference numbers 5 and 6, respectively), and wherein the display is adapted to be scrolled in the direction associated with these arrows when a user selects the arrows using a cursor. Moreover, the Acrobat Reader interface displays a thumbnail of each page of information in a thumbnail region (see reference number 3 in figure B). As this thumbnail region displays a thumbnail for each page of information, and thus displays the information in its entirety, a thumbnail is considered a mapping preview page and the thumbnail region is considered a mapping preview page region, like that expressed in claims

41 and 79 of the present application. Specifically regarding claims 42 and 80, this thumbnail region comprises a current region indicia adapted to indicate the portion of information currently displayed. For example, in figure B, thumbnail number 2 is highlighted to indicate that the second page of information is displayed. Lastly, and in regard to claims 43 and 81, a user may select a thumbnail in the thumbnail region which moves the current region indicia to that thumbnail (the thumbnail is highlighted) and displays the page of information associated with that thumbnail (for example, figure C shows the Acrobat Reader interface of figure B after the third thumbnail has been selected). The uses and benefits of such scrolling means are well-known in the art.

Therefore, it would have been obvious to one of ordinary skill in the art, having the teachings of Beckett, Liu, and Adobe Acrobat Reader before him at the time the invention was made, to modify the graphical user interface taught by Beckett and Liu to include the scrolling indicia, mapping preview page, and mapping preview page region of Adobe Acrobat Reader. It would have been advantageous to one of ordinary skill to utilize such combination because such scrolling means allows a user interface to present more information than can be displayed in a single window frame, as is demonstrated by Acrobat Reader. In other words, one would not have to limit the size of the source program tree and target program tree of Beckett and Liu such that they may only be displayed within a single window frame. As additionally demonstrated by Acrobat Reader, the use of thumbnails allows a user to quickly ascertain a desired spot to scroll to and to quickly move to that spot.

Regarding claim 89, the graphical user interface of Beckett and Liu, as modified by the teachings of Acrobat Reader as described above, is understood to comprise means for displaying

at least a portion of a mapping between a source object and a target object in a mapping screen region. Moreover, as described above, the graphical user interface is also considered to include means for displaying a scrolling indicia in the mapping screen region adapted to allow the user to selectively display portions of the mapping in the mapping screen region.

Claims 11-13, 14-16, 30, 53-57, 68, and 88 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Beckett and Liu, which is described above, and also over Delphi 3, as is described by Neil Rubenking in the book entitled *Delphi 3 for Dummies*. Specifically regarding claims 11, 53, and 88, the combination of Becket and Liu discloses a mapping tool graphical user interface, wherein as shown above in the rejection for claim 1, this interface comprises: a source screen region adapted to display a graphical representation of a source object; a target screen region adapted to display a graphical representation of a target object; and a mapping screen region which is separate from and adjacent to each of the source and target screen regions and which is adapted to allow a user to create and display a mapping between the graphical representation of the source object and the graphical representation of the target object using graphical mapping indicia. The combination however does not explicitly disclose that the interface includes a graphical compiler object adapted to allow the user to generate compiled mapping output code using a compiler, as is expressed in claims 11, 53, and 88. In fact, Beckett discloses that the graphical user interface provides for the construction of applications "with a completely visual process that requires no modifications or compilation of source code" (see column 5, lines 8-15).

Like the application development environment disclosed by Becket and Liu, Delphi 3 provides an application development environment which provides for the visual construction of programs. Regarding the claimed invention, the Delphi 3 graphical user interface includes a "Run" button which compiles such a visually-constructed user program and then runs it (see the section entitled "Your First Program RIGHT NOW!" beginning on page 21). Thus it is interpreted that this Run button is adapted to allow the user to generate compiled output code using a compiler.

It would have therefore been obvious to one of ordinary skill in the art, having the teachings of Beckett, Liu, and Delphi 3 before him at the time the invention was made, to modify the graphical user interface taught by Beckett and Liu such that a user may compile a constructed application. More specifically, it would have been obvious to modify the graphical user interface Disclosed by Beckett and Liu such that it includes a graphical compiler object, specifically a Run button, which like that of Delphi 3, is adapted to allow the user to generate compiled mapping output code using a compiler. It would have been advantageous to one of ordinary skill to utilize such a combination because allowing a user to compile the application provides for more user control over the compiled code, as is taught by Delphi 3 (see the section entitled "Setting compiler option for safety" beginning on page 10).

Regarding claims 12, 13, and 54 the source and target objects in the mapping screen region disclosed by Beckett and Liu comprise at least one source node and at least one target node respectively, as is shown above in the rejection for claim 1. Moreover, as also shown above in the rejection for claim 1, the graphical mapping indicia between the source and target objects is displayed as a line connecting such a source node and a target node. Consequently,

with the combination of Beckett, Liu, and Delphi 3 described above, it is understood that since the source node is mapped to the target node so that data flows between the two nodes, the compiler is adapted to create a compiler link between the source node and the target node so the data flows between the two nodes during run time. The line connecting the source node and target node is further considered a "compiler link indicia" like that recited in claims 12 and 54. Specifically regarding claim 13, this compiler link indicia is understood to comprise a dashed line between the source node and target node. For example, figure 10 of Beckett shows a mapping screen region with several links between a source node and target nodes. These links are displayed as dashed lines.

Concerning claims 15, 16, 56, and 57, the graphical user interface of Delphi 3 includes a "Code Editor" window, which is understood to display compiled output code (see the section entitled "Instant program – the Code Editor" beginning on page 17). Consequently, with the above-described combination of Beckett, Liu, and Delphi 3, this Code Editor window may be included to display the compiled mapping output code. Specifically regarding claim 16, this Code Editor window, may be adapted to display a compiler warning (see pages 329-332).

Regarding claims 30 and 68 the source and target objects in the mapping screen region disclosed by Beckett and Liu comprise at least one source node and at least one target node respectively, as is shown above in the rejection for claim 1. Moreover, as also shown above in the rejection for claim 1, the graphical mapping indicia between the source and target objects is displayed as a line connecting such a source node and a target node. This line is considered a function object for the reasons disclosed in the rejection for claim 2. Consequently, with the above-described combination of Beckett and Delphi 3, it is understood that this function object

may be associated with a script used by a compiler to generate compiled output code. For example, it is interpreted that the graphical components used to create an application using the application development environment disclosed by the combination each associated with a script (for example, see the section entitled, "Instant program – the Code Editor" beginning on page 17). Consequently, it is interpreted that the function object, which may connect two such graphical components, is similarly associated with a script.

Regarding claims 14 and 55, the mapping screen region of Beckett and Liu is understood to be adapted to allow a user to move a link by selecting the line near one of the target node, the source node, and a function object, and moving the line to the other of the target node, the source node, and the function object, as is described above in the rejection for claim 47. More specifically, the user selects a line near one of the target node, source node, and function object by selecting the source and target node and then selecting an "Unmap" button (see column 6, lines 63-65 of Liu). The user may then create a new line, i.e. move the line, by selecting a target node and source node and then a "Map" button (see column 6, lines 58-62 of Liu). As described above in the rejection for claim 12, this line is considered a compiler link indicia. Thus with the combination of Beckett and Delphi 3, as modified by the teachings of Liu, it is understood that the compiler link indicia is adapted to allow the user to select the compiler link indicia and move the compiler link indicia to one of another source node and another target node.

Allowable Subject Matter

Claims 51 and 52 are allowed. The following is an examiner's statement of reasons for allowance:

Regarding claims 51 and 52, the prior art discloses a mapping tool graphical user interface that comprises a source object which includes a source tree structure having a source root node, a source record node, and a source field node. Similarly, the prior art discloses that this mapping tool graphical user interface also comprises a target object which includes a target tree structure having a target root node, a target record node, and a target field node. Moreover, the prior art teaches that the nodes may be indented in a hierarchical fashion. Additionally, the prior art teaches that at least one of the source object tree structure and target object tree structure comprises a collapse indicia associated with one of a root node and a record node in one of a source object tree structure and target object tree structure, wherein the collapse indicia is adapted to allow a user to collapse and expand the one of a root node and a record node in a hierarchical fashion, and wherein the source object tree structure and target object tree structure is displayed in one of a collapsed form and expanded form according to the collapse indicia. Lastly the prior art teaches that this graphical link indicia comprises a collapsed link indicia adapted to indicate the associated between the target node and the source node when the one of the source object tree structure and the target object tree structure is displayed in the collapsed form. However, the prior art does not specifically teach that the *field* nodes are indented in a hierarchical fashion from the *record* nodes, and that the *record* nodes are indented in a hierarchical fashion from the *root* nodes. Similarly, the prior art further teaches indenting the nodes toward a mapping screen region in a hierarchical fashion. However, the prior art does not

specifically teach that the *field* nodes are indented in a hierarchical fashion from the *record* nodes, and that the *record* nodes are indented in a hierarchical fashion from the *root* nodes. Since claim 52 is dependent upon allowed claim 51, and includes all of the limitations of claim 51, claim 52 is allowed for the reasons in which claim 51 is allowed.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Claims 17, 24-28, 30-31, 33-34, 36, 38, 58, 65-66, 69, 71-72, 74, 76, and 87 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The following is an examiner's statement of reasons for allowance:

In regard to claims 17 and 58, the prior art discloses a mapping tool graphical user interface that includes a mapping region, which is adapted to allow a user to create a mapping between a graphical representation of a source object and a target object. The prior art also teaches that this interface may comprise an output code screen adapted to display compiler warnings. However, the prior art does not teach that this output code screen is adapted to allow the user to select the compiler warning, and wherein as expressed in claims 17 and 58, the mapping region includes a compiler warning indicia adapted to indicate at least one graphical mapping indicia as being associated with the selected compiler warning.

Regarding claims 24 and 65, the prior art discloses a mapping tool graphical user interface that includes a mapping region, which is adapted to allow a user to select graphical link indicia that associates a target node with a source node. Additionally, the prior art teaches that such graphical link indicia is indicated in response to its selection. However, the prior art does not teach that a link properties page in a link properties screen region is displayed, wherein the link properties page is adapted to display a property associated with a link associated with the selected graphical link indicia, and to allow the user to modify the property.

As claims 25 and 66 are dependent upon allowed claims 24 and 65, respectively, and include all of the limitations of claims 24 and 65, respectively, claims 25 and 66 are allowed for the reasons in which claims 24 and 65 are allowed.

Regarding claims 26 and 87, the prior art discloses a mapping tool graphical user interface that comprises a source object which includes a source tree structure having a source root node, a source record node, and a source field node. Similarly, the prior art discloses that this mapping tool graphical user interface also comprises a target object which includes a target tree structure having a target root node, a target record node, and a target field node. Moreover, the prior art teaches that the nodes may be indented in a hierarchical fashion. Additionally, the prior art teaches that at least one of the source object tree structure and target object tree structure comprises a collapse indicia associated with one of a root node and a record node in one of a source object tree structure and target object tree structure, wherein the collapse indicia is adapted to allow a user to collapse and expand the one of a root node and a record node in a hierarchical fashion, and wherein the source object tree structure and target object tree structure is displayed in one of a collapsed form and expanded form according to the collapse indicia.

Lastly the prior art teaches that this graphical link indicia comprises a collapsed link indicia adapted to indicate the associated between the target node and the source node when the one of the source object tree structure and the target object tree structure is displayed in the collapsed form. However, the prior art does not specifically teach that the *field* nodes are indented in a hierarchical fashion from the *record* nodes, and that the *record* nodes are indented in a hierarchical fashion from the *root* nodes. Similarly regarding claim 87, the prior art further teaches indenting the nodes toward a mapping screen region in a hierarchical fashion. However, the prior art does not specifically teach that the *field* nodes are indented in a hierarchical fashion from the *record* nodes, and that the *record* nodes are indented in a hierarchical fashion from the *root* nodes.

As claims 27 and 28 are dependent upon allowed claim 26, and include all of the limitations of claim 26, claims 27 and 28 are allowed for the reasons in which claim 26 is allowed.

Regarding claims 30, 31, 33, 34, 36, 38, 69, 71, 72, 74, and 76, the prior art discloses a mapping tool graphical user interface that comprises a mapping screen region adapted to allow a user to create a mapping between a graphical representation of a source object and a graphical representation of a target object using graphical mapping indicia, wherein this graphical mapping indicia comprises a function object adapted to associate the target node with the source node. However, the prior art does not explicitly disclose that this mapping tool graphical user interface further comprises a function object palette screen in a function object palette screen region, wherein the function object palette screen includes a plurality of function objects, and wherein the function object palette screen is adapted to allow a user to drag and drop a function object

from the function object palette screen onto the mapping screen region using a user interface selection device. Furthermore, the prior art discloses that the user may select the function object, wherein the mapping screen region further comprises a function object selection indicia adapted to indicate that the function object has been selected. However, the prior art does not teach that this mapping tool graphical user interface further comprises a function object properties page in a function object properties page screen region adapted to display a property associated with the selected function object, and further adapted to allow a user to modify the property, as is expressed in claims 33 and 71. As claims 34 and 72 are dependent upon allowed claims 33 and 71, and include all of the limitations of claims 33 and 71, claims 34 and 72 are allowed for the reasons in which claims 33 and 71 are allowed. Moreover, the prior art teaches that this graphical user interface may be adapted to allow a user to select a plurality of function objects, and where the function object selection indicia is further adapted to indicate that the plurality of function objects have been selected, as recited in claims 35 and 73. The prior art however does not specifically disclose that the plurality of function objects may be selected by the user by creating a box around the plurality of function objects using a user interface selection device, as is expressed in claims 36 and 74. Lastly, the prior art does not teach that the mapping output region further comprises a function object creation interface adapted to allow the user to create a user script and to associate the user script with a user function object, as is expressed in claims 38 and 76.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Blaine Basom whose telephone number is (703) 305-7694. The examiner can normally be reached on Monday through Friday, from 8:30 am to 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Cabeca can be reached on (703) 308-3116. The fax phone number for the organization where this application or proceeding is assigned is (703) 746-7238.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 305-3900.

btb

JOHN CABECA
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2